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United States Patent [19]**Kawaguchi et al.**[11] **Patent Number:** **5,162,121**[45] **Date of Patent:** * **Nov. 10, 1992****[54] APPARATUS FOR EXTRUDING MULTIPLE SYNTHETIC RESINS**[75] **Inventors:** **Kiyoshi Kawaguchi; Hideki Yagishi,**
both of Yokohama, Japan[73] **Assignee:** **Toyo Seikan Kaisha, Ltd.,** Tokyo,
Japan[*] **Notice:** The portion of the term of this patent
subsequent to Apr. 14, 2009 has been
disclaimed.[21] **Appl. No.:** **671,481**[22] **Filed:** **Mar. 14, 1991****Related U.S. Application Data**[63] Continuation of Ser. No. 301,385, Jan. 25, 1989, Pat.
No. 5,104,305.**[30] Foreign Application Priority Data**

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[51] **Int. Cl.⁵** **B29C 45/16**[52] **U.S. Cl.** **425/130**[58] **Field of Search** 425/130; 572, 131.1,
425/133.1, 381, 562, 564, 463, 462, 132;
264/328.9, 328.12, 328.15**[56] References Cited****U.S. PATENT DOCUMENTS**4,497,621 2/1985 Kudert et al. 425/572
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5,028,226 7/1991 De'ath 425/130*Primary Examiner*—Tim Heibrink
Attorney, Agent, or Firm—Beveridge, DeGrandi &
Weilacher**[57] ABSTRACT**

A nozzle device for extruding multiple synthetic resins as a resin composite, having a main extrusion flow passage having a main extrusion opening, a subsidiary extrusion flow passage having a subsidiary extrusion opening, at least a downstream portion of the subsidiary extrusion flow passage being disposed in the main extrusion flow passage, and an opening-closing member for opening or closing the subsidiary extrusion opening. The nozzle device further has an auxiliary extrusion flow passage which has an auxiliary extrusion opening and at least a downstream portion of which extends through the main extrusion flow passage as it surrounds the downstream portion of the subsidiary extrusion flow passage. The auxiliary extrusion opening is positioned downstream of the subsidiary extrusion opening and the downstream end portion of the auxiliary extrusion flow passage has a tapered part. The auxiliary extrusion flow passage is designed such that when the opening-closing member is held at a position at which it closes the subsidiary extrusion opening, a synthetic resin flowing through the auxiliary extrusion flow passage and extruded into the main extrusion flow passage through the auxiliary extrusion opening flows while undergoing collision with the forward end portion of the opening-closing member.

4 Claims, 5 Drawing Sheets